

**1B, C: Propositions and Truth Values, Sets and Venn Diagrams**

Chapter 1 Class Prep Assignment

Due at the beginning of first class

1. Use the internet to find definitions of these terms (as related to logic and arguments) and write definitions in your own words.

Proposition:

Negation:

Double Negation:

Truth Table:

2. Watch the video on **Truth Tables** and take notes on this page.

*Example Propositions:*  $p$ : Jamie is wearing jeans     $q$ : Jamie is wearing a hat

**Negation and Double Negation**

If a statement is true, its negation is false and its double negation is true.

$p$	$not\ p$	$not\ not\ p$

**And Statements**

The statement " $p$  and  $q$ " is true ONLY if both are true.

$p$	$q$	$p\ and\ q$

**Or statements**

The statement " $p$  or  $q$ " is true if either or both are true. (Inclusive or). We will use inclusive unless otherwise specified.

$p$	$q$	$p\ or\ q$

**If..., then Statements (Conditional)**

A conditional proposition has two parts and each can be true or false. The entire statement is then either true or false. "If I wear jeans, then I will wear a hat"

$p$	$q$	$If\ p,\ then\ q$

**1C: Sets and Venn Diagrams**

Class Prep Assignment

Due at the beginning of next class

Watch the video on **Venn Diagrams** and take notes on this page.

**Types of Relationships**

Draw a Venn diagram for each situation and describe the relationships between the sets.

a. Insects and flies

b. Insects and cats

c. Athletes and Students

**Four Categorical Propositions**

S: Subject Set

P: Predicate Set

a. All S are P  
All children are people

b. No S are P  
No college students are cats

c. Some S are P  
Some college students are athletes

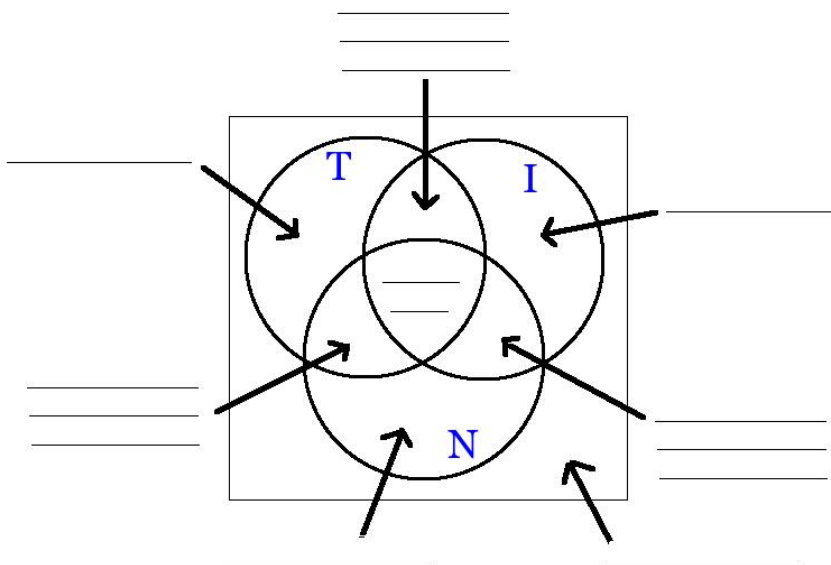
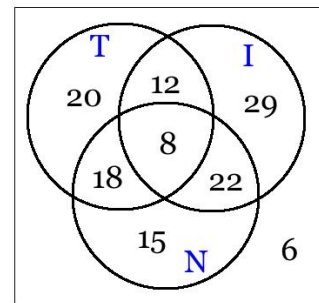
d. Some S are not P  
Some college students are not athletes

**A Venn Diagram with Three Sets and Data**

130 people were surveyed about the news sources that they used on a regular basis.

The results are given in the Venn diagram:

T represents television, I represents the Internet, and N represents newspapers



a) Write a description for each of the eight areas.

b) How many people used the Internet?

c) How many people used at least two of the three sources?

d) How many people didn't use newspapers?

**1D: Analyzing Arguments**

Class Prep Assignment

Due at the beginning of next class

Watch the videos for Section 1D and take notes.

Inductive Arguments

**Specific examples**

I see teenagers skateboarding.  
My son's friends skateboard.

**General conclusion**

All teenagers like to skateboard.

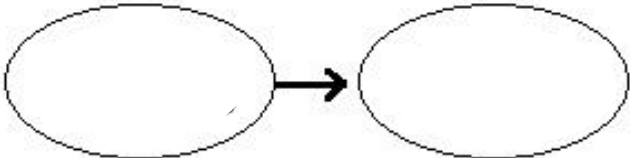
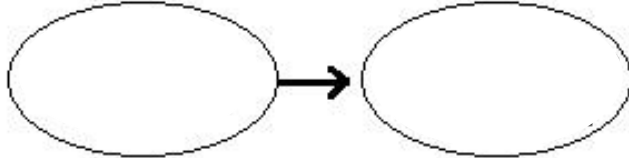
Deductive Arguments

**General premises**

All cars have at least two doors.  
A Ford Focus is a car.

**Specific conclusion**

A Ford Focus has at least two doors.

<b>INDUCTIVE ARGUMENT</b>	<b>DEDUCTIVE ARGUMENT</b>
	
<p><input type="text"/> be used to prove its conclusion</p>	<p><input type="text"/> be used to prove its conclusion</p>
<p>evaluated in terms of <input type="text"/></p>	<p>evaluated in terms of <input type="text"/></p> <p style="text-align: center;">AND</p> <p>evaluated in terms of <input type="text"/></p>

**Try: Determine whether each argument is inductive or deductive.**

- a. If Dennis misses work and there is a party at work then Dennis will miss the party.
- b. The chair in the living room is red. The chairs in the dining room and bedroom are red. Therefore, all chairs in the house are red.
- c. It is dangerous to drive on icy streets. The streets are icy so it is dangerous to drive now.

**Testing Deductive Arguments for Validity using Venn Diagrams**

Example 1.

Premise: All narcotics are habit-forming.

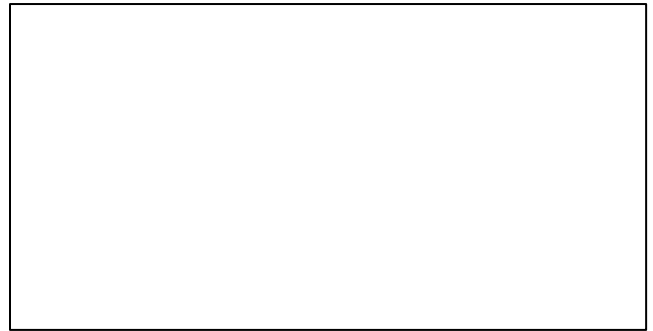
Premise: Aspirin is not habit-forming.

Conclusion: Aspirin is not a narcotic.

The conclusion is valid/invalid.

The conclusion is sound/not sound.

Venn Diagram



Example 2.

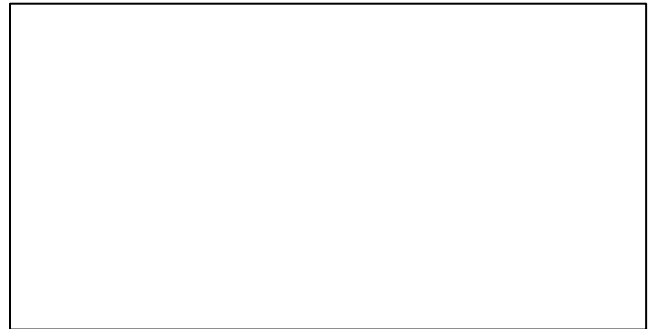
Premise: No country is an island.

Premise: Iceland is a country.

Conclusion: Iceland is not an island.

The conclusion is valid/invalid.

The conclusion is sound/not sound.



**Testing a Conditional Deductive Argument for Validity using Venn Diagrams**

Example 3.

Premise: If an employee is regularly late, then the employee will be fired.

Premise: Sharon was fired.

Conclusion: Sharon was regularly late.

The conclusion is valid/invalid.

The conclusion is sound/not sound.



**Critical Thinking in Everyday Life**

Reflection: What does critical thinking mean to you? Give an example of a time where you needed to use critical thinking in your life. Please write in complete sentences.